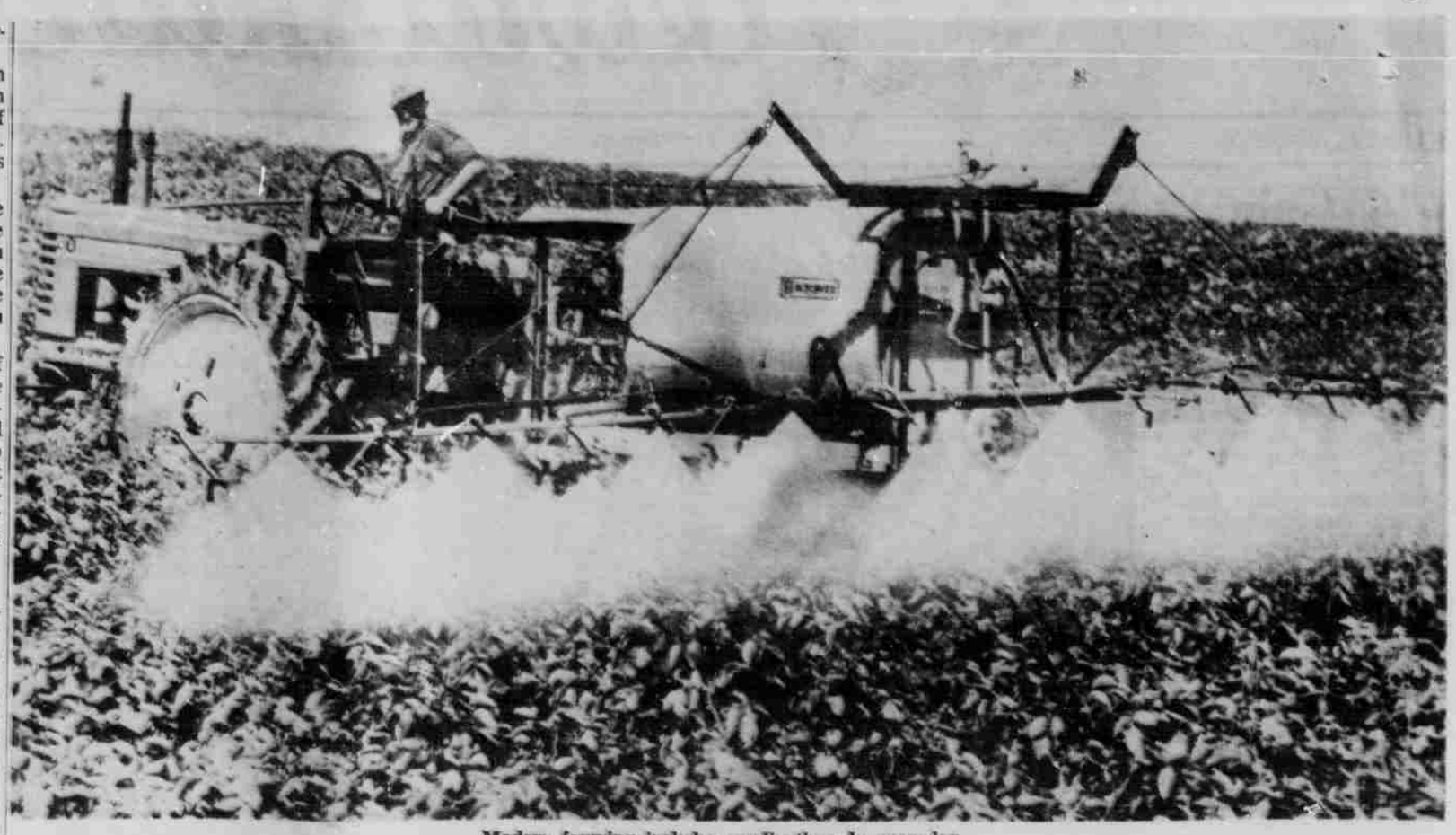
To Fight Those Weeds---Know the Enemy



Modern farming includes applications by spraying.

Tht battle of weed control is fought by everyone from the proud lawn owner to the largest crop farmer. Almost wherever crops are grown, weeds are present.

To understand this battle waged against weeds, an understanding should be had of what a weed is. Dr. Orvin C. Burnside of the University of Nebraska Agronomy Department labeled a weed briefly and accurately by saying a weed is a "plant growing out of place."

From this, it can be seen that an orchid could be a weed if it were growing where it is not desired. Plants growing out of place compete with the desired plants for moisture and plant nutrients. This competition prevents the desired plant from approaching its potential in growth and production.

While weed control makes an important contribution to a lawn's appearance, it makes an even more important contribution to the crop farmer in the form of an increased income.

National Income

Dr. Burnside said the average national income to the farmer from field crops is reduced about 20 percent by weeds. He said the national average for reduction of crop yields, even when crops are cultivated, is 10 to 30 percent.

From this, it can be seen that weeds are costly even when mechanical means of weed control are exercised. And this is where herbicides come into the picture.

"With herbicides, we are not always able to eliminate the 10 to 30 percent reduction due to weeds, but we are able to approach this figure and sometimes accomplish it," Dr. Burnside explained.

The mechanical control of weeds by cultivation can be completely replaced by herbicides in row-crops planted closely together, according to Dr. Burnside. Production cost are reduced because cultivation is eliminated and only one-half as much herbicide is required, he said.

Narrow Rows

In narrow rows, he explained, there is less area for weeds to grow and more area occupied by the crop plants. This way, the crop growth dominates weed growth earlier; thus, it is only necessary to control weeds for two months. Both, less weed area and less time required for weed control, allow a reduced rate of herbicide application.

No cultivation and less herbicide are two main factors that reduce production costs.

Undesired plants can be treated with herbicides while they grow among desired plants without any harm to the desired plants. This is possible through the use of selective herbicides. A selective herbicide is lethal to one type of plant while it is non-lethal to another type. For example, there are herbicides that will kill broad-leaf plants and do little or no harm to grassy plants. And conversely, there are herbicides that will kill grassy plants and will not harm the broad-leaf plants.

Dr. Burnside said 2-4-D is a herbicide that kills broad-leaf plants growing among grasses. On the other hand, there is 4-(2,4-DB), a herbicide that kills grassy plants growing among the broad-leaf plants.

Characteristics

Physiological characteristics vary among different kinds of plants and this phenomenon is what makes selective herbicides possible. Dr. Burnside explained that the action of 2-4-D on plants is not fully understood. He said there are many theories about how 2-4-D causes death to a plant. But nothing definite can be said about the way 2-4-D kills a plant.

He said it is known how chemicals such as Atrazine, Simazine, Diuron and Monuron kill plants. He explained that these chemicals inhibit the "Hill Reaction." The "Hill Reaction" is the breaking of water (H2o into hydrogen atoms and oyxgen atoms. The hydrogen is used by the plant as a constituent of carbohydrates. The plant without the ability to make this conversion will die, Dr. Burnside said.

In the case of 4-(2-4-DB), plants such as legumes do not possess the enzyme system or are inefficient in converting the 4-(2-4-Db) into a lethal compound.

Dr. Burnside said that the problem of dissipation of herbicides in the soil is an important one in which more work needs to be done.

He explained that some herbicide residues remain in the soil for as long as two years. Land treated for erradication of a broad-leaf plant, for example, could not be used for growing a broad-leaf plant the following year.

"Now, the only solution is to plant the same crop the following year or summer fallow," Dr. Burnside said. He said finding a chemical with a shorter residual effect would be the answer to this problem.

Union Gallery To Exhibit Studies

Fifty studies for Jose Clemente Orozco's murals at Dartmouth College will be on view in the Gallery of the Nebraska Union from July 1 to July 29, as part of the University's Summer Session Program.

Shown for the first time in November 1961 at the Museum of Modern Art, New York, the exhibition is being circulated by the Museum with the aid of a grant from the CBS Foundation Inc., the organization through which the Columbia Broadcasting System makes contributions to educational and cultural institutions.

The drawings, in ink, pencil, gouache and crayon, were selected from the collection of the late artist's son, Clemente Orozco, by Elaine L. Johnson, Assistant Curator of Drawings and Prints at The Museum of Modern Art.

Commissioned by Dartmouth in 1932, the murals cover 3,000 square feet of wall space in the college library. In two sections, one representing aboriginal culture, the other, the machine age, Orozco interpreted the forces that have molded American civilization. Although they aroused controversy when completed in 1934, the frescoes are considered one of the most outstanding examples of mural art in this country.

14 Panels

Ranging from quick sketches to final working drawings actually traced on the wall itself, studies for each of the 14 panels of the murals are shown.

The first half of the mural, called "The Coming of Quetzalcoatl", depicts the migration of ancient tribes seeking a promised land; their barbaric culture; the development of militarism; the arrival of Quetzalcoatl, the legendary white messiah who banished false gods and aroused people from intellectual and spiritual torpor; the golden age that followed; and the departure of the betrayed god, who prophesied his return 500 years later to destroy corrupt civilization.

Protest

The second half of the mural, ironically called "The Return of Quetzalcoatl," records the effect of the arrival of Cortez and his followers in America. Remarkably, they came at the exact time predicted for Quetzalcoatl's return.

The final scene is a protest against intellectual, political, and spiritual bondage, and the prophecy of a future without violence or hatred.

Orozco was a leader in the renaissance of modern Mexican painting and was active in the revival of the ancient art of fresco. He helped forge this native artistic heritage into a vital humanistic idiom. Noted for the intense expressiveness of his painting, Orozco, himself, once wrote: "My one theme is humanity. My one tendency is emotion to a maximum."

Born in Jalisco, Mexico, in 1883, Orozco grew up in Mexico where he often watched the popular printmaker, Posada, at work.

He began his advanced education at the Agricultural School at San Jacinto. In 1908, he entered the Academy of San Carlos, where he spent six years. Until his death in 1949, he was exclusively a painter and graphic artist.

He made extensive visits to the United States where, in addition to the Dartmouth Frescoes, he executed murals for Pomona College in Claremont, California (1930), and the New School for Social Research in New York (1931). In 1940, he painted six movable, exchangeable panels for The Museum of Modern Art.

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